CLAIMS

What is claimed is:

1. A method for transferring resin into reinforcing material used in the manufacture of composite articles comprising the steps of:

positioning at least one layer of said reinforcing material in a mold;

applying a sealant layer in liquid form over said reinforcing material and curing said sealant layer to form an airtight chamber encapsulating said reinforcing material between said cured sealant layer and said mold;

applying vacuum pressure to said airtight chamber for drawing resin through said reinforcing material.

2. The method of claim 1 further comprising the step of applying a gel coat layer to said mold prior to said positioning of said reinforcing material.

3. The method of claim 2 further comprising the step of selecting said gel coat layer from the group consisting of unsaturated polyester resins.

4. The method of claim 1 further comprising the step of selecting said reinforcing material to have a form selected from the group consisting of flakes, tapes, films, reinforcing bars, tubes, honeycombs and webs.

5. The method of claim 4 further comprising the step of selecting said reinforcing material from the group consisting of mica, quartz, glass, metal, polyester, acrylic, polycarbonate, thermoplastic polymer, and thermosetting polymer.

6. The method of claim 1 further comprising the step of selecting said reinforcing material to include flakes.

7. The method of claim 6 further comprising the step of selecting said flakes to be formed of a material selected from the group consisting of mica, quartz, glass and metal.

8. The method of claim 1 further comprising the step of selecting said reinforcing material to include at least one tape.

9. The method of claim 8 further comprising the step of selecting said tape to be formed of metal.

10. The method of claim 1 further comprising the step of selecting said reinforcing material to include at least one of a tube and a reinforcing bar.

11. The method of claim 10 further comprising the step of selecting said reinforcing material to be formed of metal.

12. The method of claim 1 further comprising the step of selecting said reinforcing material to include at least one film.

13. The method of claim 12 further comprising the step of selecting said film to be formed of a material selected from the group consisting of polyester, acrylic, polycarbonate, thermoplastic polymer, and thermosetting polymer.

14. The method of claim 1 further comprising the step of selecting said reinforcing material to include at least one core material.

15. The method of claim 14 further comprising the step of selecting said core material from the group consisting of honeycomb panels, polypropylene foams, nylon foams, polyester foams, and balsa.

16. The method of claim 1 further comprising the step of selecting a material for said sealant layer from the group consisting of epoxy, polyurea, polyurethane, and a two-component polyurethane/polyurea spray elastomer.

17. The method of claim 16 further comprising the step of formulating said sealant layer for providing at least one of an improved chemical resistance, moisture resistance, abrasion resistance, crack resistance and ultra-violet light resistance.

18. The method of claim 1 further comprising the step of applying said sealant layer using at least one of a brush, a spray, a roller or a flow coat process.

19. The method of claim 1 further comprising the step of applying said sealant layer to a thickness of between approximately 1 to 200 mils.

20. The method of claim 1 further comprising the step of selecting said resin from the group consisting of a polyurethane, polyurea, epoxy, unsaturated polyester, and vinyl ester resin.

21. The method of claim 1 further comprising the steps of:

prior to said step of applying said sealant, positioning at least one port at a location disposed for communicating said resin to said reinforcing material; and

applying said sealant layer around a periphery of said port to provide a leak free access for communicating at least one of said vacuum pressure and said resin to an interior of said airtight chamber.

22. The method of claim 1 further comprising the step of providing a resin flow path to said airtight chamber by piercing said sealant layer to define an opening and inserting a resin port within said opening.

23. The method of claim 1 further comprising the step of providing a fabric veil over said reinforcing material prior to applying said sealant layer.

24. The method of claim 1 further comprising the step of positioning at least one structural member in said mold prior to applying said sealant layer.

25. The method of claim 1 further comprising the step of positioning flow media in said mold prior to applying said sealant layer so as to improve resin distribution within said airtight chamber.

26. The method of claim 25 further comprising the steps of:

positioning a peel-ply layer beneath said flow media prior to applying said sealant layer; and

removing said flow media after said resin has cured.

27. The method of claim 1 wherein said mold is an open mold.

28. The method of claim 1 further comprising the step of selecting said sealant layer from the group consisting of a poly-vinyl acetate (PVA), cellulose based system and a styrene maleic anhydride copolymer based system.

29. The method of claim 1 further comprising the step of removing said sealant layer after said resin has cured.

30. The method of claim 29 wherein said removing step comprises rinsing away said sealant layer with a solvent.

31. The method of claim 30 wherein said solvent is water.

32. A method for transferring resin into reinforcing material used in the manufacture of composite articles comprising the steps of,

positioning at least one layer of said reinforcing material in a mold;

positioning at least one port at a location disposed for communicating at least one of resin and a vacuum pressure to said reinforcing material;

applying a sealant layer in liquid form over said reinforcing material and around a periphery of said port;

curing said sealant layer to form an airtight chamber encapsulating said reinforcing material between said cured sealant layer and said mold; and

applying vacuum pressure to said airtight chamber for drawing said resin through said reinforcing material

33. A method for transferring resin into reinforcing material used in the manufacture of composite articles comprising the steps of:

positioning at least one layer of said reinforcing material in a mold;

spraying a sealant layer over said reinforcing material and curing said sealant layer to form an airtight chamber encapsulating said reinforcing material between said cured sealant layer and said mold;

applying vacuum pressure to said airtight chamber for drawing resin through said reinforcing material.

34. A method for transferring resin into reinforcing material used in the manufacture of composite articles comprising the steps of:

positioning at least one layer of said reinforcing material in a mold;

positioning a flow media in said mold for improved resin distribution to said reinforcing material;

applying a sealant layer in liquid form over said reinforcing material and said flow media;

curing said sealant layer to form an airtight chamber encapsulating said reinforcing material and said flow media between said cured sealant layer and said mold;

applying vacuum pressure to said airtight chamber for drawing resin through said reinforcing material.